

Application No. 09/942,391

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A method for initializing an array of drives, comprising:
 - providing an array of drives including a first drive and a second drive, a controller and a bus subsystem that enables communications between said controller and said array of drives, each of said drives being associated with a priority and with said first drive having greater priority than said second drive; and
 - causing substantially equal usage of said bus subsystem by all of said drives while performing a zero initialization of said drives:
 - wherein said causing substantially equal usage of said bus subsystem includes:
 - issuing a first number of write related operations to each of said drives in said array, wherein each of said first number of write related operations issued to a one of said drives concerns a different logical block address range than any other of said first number of write related operations issued to said one of said drives, wherein said first number of write related operations are queued;
 - determining whether each of said drives has completed at least one of said number of write operations concerning at least one logical block address range; [[and]]
 - in response to determining that each of said drives has not completed at least one of said number of write operations concerning at least one logical block address range, deferring issuing at least one more write related operation and continuing said determining whether each of said drives has completed at least one of said number of write operations concerning at least one logical block address range; and
 - in response to determining that each of said drives has completed at least one of said number of write operations concerning at least one logical block address range, issuing at least one more write related operation to each of said drives in said array.

2. (Original) A method, as claimed in Claim 1, wherein:

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said causing step includes providing write operations to all said drives of said array during substantially all the time said zero initialization of said drives is being performed.

3. (Original) A method, as claimed in Claim 1, wherein:
said causing step includes controlling utilization of said bus subsystem independently of said priority.
4. (Previously Presented) A method, as claimed in Claim 1, wherein:
said issuing a first number of write related operations to each of said drives includes issuing a predetermined number of at least two write operations to said first drive and a predetermined number of at least two write operations to said second drive and in which subsequent issuing of another write operation to said first drive is made after at least one of said predetermined number of at least two write operations is completed by said second drive and after at least one of said predetermined number of at least two write operations is completed by said first drive.
5. (Previously Presented) A method, as claimed in Claim 4, wherein:
said predetermined number of at least two write operations issued to said first drive relates to one or more ranges of logical block addresses (LBAs).
6. (Previously Presented) A method, as claimed in Claim 4, wherein:
said predetermined number of at least two write operations is four.
7. (Original) A method, as claimed in Claim 5, wherein:
said causing step includes checking whether a write operation for at least one of said one or more ranges of LBAs has been completed to each of said drives of said array.

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8. (Original) A method, as claimed in Claim 7, wherein:
said causing step includes issuing a write operation for a next one or more LBA ranges to be written to each of said drives of said array.

9. (Currently Amended) An apparatus for initializing an array of drives, comprising:

an array of drives for storing information, said array of drives including at least a first drive and a second drive with said first drive being associated with a higher priority than said second drive, wherein each of said drives in said array is associated with a queue operable to store a number of write commands;

a bus subsystem connected to said array of drives; and

a controller in communication with said array of drives using said bus subsystem, said controller for controlling issuance of write operations, ~~including a first write operation, a second write operation and a third write operation, to said array of drives in order to initialize said drives, wherein said controller controls said first write operation to at least each of said first and second drives, controls said second write operation to at least said first and second drives, and controls said third write operation to at least said first and second drives, and in which said third write operation is controlled to said at least first and second drives after at least one of said first write operation and said second write operation has been completed on at least each of said second drive and said first drive to each drive within said array, wherein after an initial set of write operations is issued to each of said drives within said array, an additional write operation is not issued to each of said drives in said array until at least one write operation included in said initial set of write operations has been completed on each of said drives.~~

10. (Original) An apparatus, as claimed in Claim 9, wherein:

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said bus subsystem is shared substantially equally by all said drives of said array when said controller controls said first and second write operations.

11. (Original) An apparatus, as claimed in Claim 9, wherein:
said write operations are implemented by all of said drives substantially continuously in order to initialize said drives of said array .
12. (Original) An apparatus, as claimed in Claim 9, wherein:
said controller controls a predetermined number of at least one write operation to at least said first and second drives and with said predetermined number of at least one write operation to said first and second drives being controlled before issuance of at least said second write operation.
13. (Original) An apparatus, as claimed in Claim 12, wherein:
said predetermined number relates to one or more ranges of logical block addresses (LBAs).
14. (Original) A method, as claimed in Claim 12, wherein:
said predetermined number is at least four.
15. (Original) An apparatus, as claimed in Claim 13, wherein:
said controller checks whether one write operation is completed for at least one of said ranges of said LBAs to each of said drives of said array.
16. (Original) An apparatus, as claimed in Claim 15, wherein:

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said controller issues a next write operation to each of said drives of said array for a next range of LBAs after a determination is made that said one write operation is completed for said at least one LBA range.

17. (Original) An apparatus, as claimed in Claim 9, wherein:
said first drive has the highest priority and said second drive has the lowest priority of said drives of said array and said write operations are used to zero initialize said drives.

18. (Previously Presented) A method for initializing an array of storage devices, comprising:

receiving a command to initialize a storage array, wherein said storage array includes a number of storage devices;

issuing at least first and second write related operations to each of said storage devices in said array, wherein said first write related operation concerns a first logical block address range and said second write related operation concerns a second logical block address range; and

only in response to determining that ~~each every one~~ of said storage devices included in said storage array has completed at least one of said at least first and second write related operations, issuing an additional write related operation to ~~each every one~~ of said storage devices in said storage array, wherein said additional write related operation concerns a logical block address range not included in said first logical block address range or said second logical block address range.

19. (Previously Presented) The method of Claim 18, wherein said issuing at least first and second write related operations comprises issuing first, second, third and fourth write related operations, wherein said first write related operation concerns a first

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logical block address range, wherein said second write related operation concerns a second logical block address range, wherein said third write related operation concerns a third logical block address range, wherein said fourth write related operation concerns a fourth logical block address range, wherein said additional write related operation comprises a fifth write related operation, and wherein said fifth write related operation concerns a fifth logical block address range.

20. (Previously Presented) The method of Claim 18, further comprising:
placing at least one of said issued at least first and second write related operations for each of said storage devices in a command queue.

21. (New) The apparatus, as claimed in Claim 1, wherein said logical block address ranges each comprise more than one logical block address.

22. (New) An apparatus, as claimed in Claim 9, wherein each of said write operations relates to a logical block address range that comprises more than one logical block address.

23. (New) The method of Claim 18, wherein said logical block address ranges each comprise more than one logical block address.